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ABSTRACT

If prospective teachers are expected to transfer their classroom theory to school situations, identical or highly similar situations should be provided to show the learner the relationship between the theoretical elements presented in college lectures and the actual teaching behaviors to which they apply. While field experience in an authentic school classroom is valuable, the logistics of implementing this are often prohibitively complex. Teacher educators have successfully utilized simulation activities that give trainees a vicarious field experience. The most common of these activities are microteaching, peer teaching, role playing, and use of video tape for observation. These activities are designed to provide teacher trainees practice for the activities a teacher engages in and the problems a teacher encounters. Simulation of classroom situations exposes trainees to experiences through various representations that are similar to those they will eventually face in the real world. (JD)

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# ACHIEVING TRANSFER OF LEARNING THROUGH SIMULATION

The usual teacher training program exposes prospective teachers to the areas of child growth and development and curriculum and instruction.[1] Additionally, teacher training programs are concerned with evaluation, audio-visual materials and techniques, educational philosophy and history, with the sum total of the entire program culminating in student teaching.[2]

This type of arrangement makes the implicit assumption that prospective teachers can transfer the salient portions of pre-teaching course experiences to their practical teaching. P. J. Tansey and Derick Unwinn recognize this assumption and discuss its weakness:

> The College has a two-fold function in the preparation of teachers. It must supply the teacher with an understanding of the basic sciences of education so that he can understand his society. It must also give him the practical basis that will enable the student to go into a classroom and teach. In general, the colleges do each of these jobs well. The difficulty that colleges tend to have is in preparing students in such a way that they can bring their theoretical knowledge to bear in specific situations as they occur in the classroom.[3]

Student difficulty in transferring theoretical knowledge to specific classroom situations has also been noted by Ryan. Ryan states that, "Studies of student-teachers and first-year teachers indicate that passing examinations on knowledge of educational psychology is not correlated with application of these principles in teaching situations."[4]

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As a result of this finding, it appears that successful transfer of knowledge is not a result of cognition alone. Educational theorists such as Gagne, Glaser, Kingsley, Thorndike, Trow and others also discount the possibility that transfer is a result of cognition and related components. They generally agree that the mere presence of common components does not assure positive transfer. However, inherent in successful transfer is the principle of identical elements. E. L. Thorndike, a pioneer researcher in the area of transfer, supports the principle of identical elements and concludes from his experiments that, "The spread of practice (transfer) occurs only where identical elements are concerned in the influencing and influenced functions."[5] Gagne concurs by stating: ". . .'transfer occurs because of the occurrence of specific identical (or highly similar) elements within developmental sequences' (4, p. 20)."[6] Vicek also supports the principle and states:

> There is a good deal of evidence and little disagreement that positive transfer increases with the degree of similarity or identical elements of the learned task to the final task.[7]

In reference to teacher training, it would follow then that if prospective teachers are expected to transfer their classroom theory to school situations then identical or highly similar situations must be provided to show the learner the relationship between the theoretical elements presented in college lectures and the actual teaching behaviors to which they apply.

Concomitant to the principle of identical elements is the principle of stimulus generalization. Ellis states, "Stimulus generalization . . . is the evocation of a nonreinforced response given to stimuli similar to the conditioned stimulus."[8] Trow elaborates upon this definition and states, "Stimulus generalization . . . implies a continuing recognition of the identical component among varying concomitants."[9]

Instructionally this would mean providing experiences which would help the learner see different situations and activities which contain or involve the elements of the subject he is studying.[10] In joining the principles of identical elements and stimulus generalization it can be said that to whatever extent there is a similarity between elements provided for the learner with those in reality, generalization to parallel situations in reality will occur.[11] Translated to teacher training this would mean that if the similarity between elements of classroom theory are related with those of specific teaching tasks or problems then generalization to parallel teaching situations in reality will occur.

The final component which provides the link between cognition and future application situations is the means or method by which the elements of the present activity are generalized to the future activity. This becomes of paramount importance in teacher training since the knowledge and skills learned will need to be applied outside the structure in which they were learned. Trow emphasizes this by saying:

> But if abilities, attitudes, and skills in general, and ability to think in particular, are to be transferred outside the structure, the emphasis must be shifted to other kinds of situations in which they are to be used. Methods of teaching are thus of the essence, not merely 'bedside manner'. . . ."[12]

To meet this need for relevant skill based experiences traditional teacher training programs provide trainees, practicum programs within public school classrooms. Practicum experiences range from observation to actual teaching with their primary purpose being to provide teacher trainees authentic classroom experience thus providing them the experiential base necessary for integrating theory with practice. However, practicum programs include logistical as well as instructional problems which in some instances limit the meaningfulness and realistic nature of this experience.

Due to increasing enrollment in teacher training programs, university as well as cooperating public school personnel have found it increasingly difficult to place trainees in suitable classroom situations. "The sheer logistics of arranging schedules, transportation, and supervision for students, limits their meaningful placement. . . ."[13] Where satisfactory placement cannot be secured, compromise solutions are offered. These alternate assignments may be worthwhile and productive experiences in some situations; however, often times students are placed in these assignments simply because there is an opening rather than because their needs of area of study dictate the assignment. Even when

appropriate placement of trainees is possible other factors impinge upon and limit the effectiveness of practicum programs. These factors must be considered if quality programs are to be developed. First, unless all members of the trainee group have the same practicum experiences; that is, observe and focus upon the same classroom phenomena, they will have little or no basis for discussion.[14] Secondly, there is a shortage of qualified supervisory personnel; university as well as public school. Hence, trainees may receive inadequate guidance in developing constructs which would focus their attention to key elements of the teaching learning process.[15] A third limiting factor is the variability between supervisors as to the observation constructs that will be used with the trainees.[16] This conflict regarding focal points adds to trainee confusion. A fourth factor closely related to the third is a lack of common expectancies which the trainee should vigorously seek and strive to acquire during his practicum experience.[17]

In order to overcome these limiting factors, educators have sought out and successfully utilized simulation activities which provide trainees a vicarious field experience. The most common of these activities appear to be micro-teaching, peer-teaching and role playing. These activities are designed to provide teacher trainees practice for the activities a teacher engages in and the problems a teacher encounters thus providing an alternative means of

bridging the gap between the theoretical models of the teaching-learning process and the operational skills of the practicing teacher.[18] More importantly, these experiences also offer control over the desired instructional situation.

While attending classes, trainees accumulate a body of information about pupils and how to teach them. Through lectures, films and vicarious experiences, trainees are able to familiarize themselves with some of the activities a teacher must engage in. Through field experience trainees can work and meet with teachers and learn of some of the problems a teacher encounters and their possible solutions. However, despite the attempt to provide experiences which relate theoretical knowledge to practical application, trainees experience difficulty in translating theory into practice.[19] As Mitchell states, "A period of observation is a necessary buffer zone between the study of educational theory and actual teaching."[20]

Although observation is recognized as an essential step between actual teaching practice and the principles of learning and development, the problems which limit the meaningfulness and realistic nature of observation experience limitations have been presented.

Developments in other simulation techniques, however, may offer help in remediating the limiting factors mentioned. One such type of simulation experience is the use of film sequences to provide trainees a simulated observation experience.

Video tape recordings have been used as an observation technique with much success in student teaching.[21] Fuller and Manning also support the use of video tape as a mean of self-observation and state that it is an effective means of changing teacher behavior.[22] Leonard, Gies and Poden[23] determined that video tape observation had a great impact on the classroom behavior of student teachers as measured by classroom interaction scales than did regular supervisory feedback. The explanation for the success of video tape as an observation technique has been provided by Fuller et al., they state that video tape serving as an observation technique is enhanced by some form of "focusing," a procedure in which specific actions are selected for feedback or in which specific actions are pinpointed for the viewer by peers or supervisors.[24] Schueler and Gold,[25] Kagan,[26] and Nielson[27] also concur that "focusing" during the observation of video tapes was necessary for successfully analyzing teaching performance and in improving a student teacher's awareness of his or her strengths and weaknesses. It appears from the studies presented that the importance of focusing during observational experience enjoys a large measure of support. Closely related to focusing is identification.[28] After a trainee has been made aware of (focused upon) specific behaviors he can then learn to identify the signs which cause or influence that particular behavior. Twelker recognizes the skill of identifying stimulus situations by stating, "An important skill that may be

taught (by simulation) . . . is the learning to identify important cues, signals, and other simulus situations."[29] It can be said then that focus and identification go hand in hand. A trainee first needs to be made aware of the behavior to look for. This focusing then provides the constructs which provide the trainee the basis for identifying similar future behaviors or situations.

It appears from the studies cited that simulated observation is a viable means for changing teacher trainee behavior, it allows trainees and instructors to focus upon select behaviors thus providing them a common base for discussion; it also provides the constructs upon which trainees future observations can be guided.

Another advantage of simulated observation experience is decision-making. A widely accepted objective of teacher education programs is to help prospective teachers become more effective decision makers in the classroom.

Tansey and Unwinn state that human reaction and interaction are involved in the teaching act.[30] As a result, part of the success or failure of the teaching-learning process is influenced by teacher behavior. Combs concurs with Tansey and Unwinn and states that effective teaching or effective helping depends upon how well the teacher or helper uses himself.[31] Hence, the more prepared a teacher is to identify and resolve problem situations the more appropriate and effective will be his classroom behavior. Hancock makes the point

more directly by stating, "Prospective teachers need experiences that permit them to engage in decision-making of the type they will experience in the classroom."[32]

The success of simulation exercises to improve decision-making skills has been documented in many areas of learning including teacher education. Speaking about simulation exercises Western Behavioral Sciences Institute found that among other attributes it can be used to teach students how to be more skillful decision makers.[33] Similar claims as to the capacity of simulation for teaching and facilitating decision-making skills have been provided by Greenlaw,[34] Guetzkow,[35] and Lloyd.[36]

Winters while speaking of simulation and decision-making seems to conceptualize the practice of decision-making skills offered by simulation techniques as a form of student research. His reasoning being that simulation allows students to research by experimenting with decision-making.[37] Twelker also notes simulation exercises can increase decision-making skills and states that simulation provides students the opportunity to make decisions about how to handle a typical classroom problem by weighing the consequences of one response against another. He concludes from his research that, "Several studies have shown a definite improvement in the student's handling of the problem after (simulation) training. . . ."[38]

As indicated by the above mentioned research, a simulated observation experience can afford trainees the opportunity to view select classroom situations which would provide them valuable experience in identifying and reacting to instructional situations highly similar to those they will some day encounter in their actual teaching assignments.

Another advantage which is likely to result when students are provided opportunities to practice decision-making or other skills highly similar to those they will need to perform in their future positions is transfer of training.[39] "Transfer of training occurs when the results of learning in one situation affect our performance in different situations."[40] When performance on the second learning or task (the transfer task) is facilitated by the first learning or task, positive transfer is said to have occurred from the first task to the second task. When performance on the second task is inhibited, it is said that negative transfer has occurred.

Positive transfer " . . . takes place through the medium of components common to the activity transferred."[41] Twelker elaborates upon how transfer affects instruction:

> Supposedly, what is taught in instruction must fit real life. If there exists a 'credibility gap' between instruction and the operational world, then the learner is at a disadvantage when it comes to either performing in the real world, or understanding what the real world is like.[42]

Simulation's uniqueness as a training device lies in its ability to provide trainees life-like or near life-like

experiences through various representations which provide the learners settings or situations similar to those they must eventually face in the real world. In teacher education Broadbent supports the use of simulation for achieving transfer of training and considers simulation to be the stage between theory and practice.[43] Cruickshank too supports the use of simulation for connecting theory with practice in teacher education and states:

> Simulations provide potentially greater transfer from the training situation to the life situation. This assumption is consistent with principles of transfer of training, one of which is, 'the more similar the stimuli in two situations, the more positive transfer there is from one to the other.' Stated another way, there is more likelihood that training taken in a job-like setting will have greater application when on the job than would information obtained by reading about the job or listening to lectures about it.[44]

As a device for achieving transfer of learning Tansey and Unwinn believe simulation to be a means for taking teacher learning out of the area of abstraction and transforming it to a participatory skill.[45] More concisely, simulation can provide teacher trainees an opportunity to apply what they have learned in the college classroom to simulated situations which should provide the direct transaction from theory to practice.[46]

Another advantage of simulation shown by other researchers is that it provides trainees a safe setting for learning and skills to be practiced. A popular simulation where this can be evidenced is in driver education. In a simulator, which can represent various driving conditions, students

practice their knowledge of driving and improve their skill by the manipulation of a model which is a representation of an automobile. A life-like setting is created and many of the potential hazards of driving can be presented the student trainees without the risk of endangering human life.

In teacher education Allen and Ryan state the importance of teacher trainees having a safe environment in which to practice and apply their knowledge and skills. They state:

> Other programs have--built into their training programs--opportunities for safe practice. The law student has his moot court. The medical student has his cadaver and his rounds in the clinic; the aircraft pilot has his Link Trainer; the actor has his closely supervised rehearsals. The beginning teacher, however, must learn to teach amid the hurly-burly of his scheduled classes.[47]

Kersh, a pioneer in the use of simulation for teacher training, demonstrates the capacity of simulation to provide a safe setting for teacher trainees to practice and apply knowledge and skills. He produced filmed incidents which teacher trainees had to resolve. If mistakes were made, students were given an opportunity to try again without the censure or pain which would have resulted in a live teaching situation.[48]

Summarizing these findings it can be said that simulated observation is a viable means for changing teacher trainee behavior. It allows trainees and instructors to focus upon select behaviors thus providing them a common base for discussion, it also provides the constructs upon which trainees' future observations can be guided. Second, it can enhance decision-making skills by providing trainees

the opportunity to identify and react to instructional situations highly similar to those they will eventually encounter in their actual teaching assignments. Third, by providing specific instruction which shows the connection between elements of classroom theory to those of specific teaching tasks or problems and by providing trainees the opportunity to apply their learnings in these areas, transfer of training is enhanced. Finally, a similated observation experience would provide trainees a safe setting to openly question teaching practices and procedures to which they are opposed as well as apply their knowledge without the fear of censure or failure which may result in a live field experience.

Based upon the findings presented it seems reasonable to assume that the attributes ascribed to simulation as an instructional device have the potential to remediate the logistical and instructional problems field experience programs often face as well as accomplish one of the ultimate objectives of field experience programs which is practical application of factual knowledge gained in the college classroom to the public school teaching situation to which it applies.

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